

ABSTRACT OF THE DISCLOSURE

Medical disorders with a neurological origin may be treated by modifying the ion concentration of brain fluid in the brain of a patient. The ion concentration of the fluid of the brain may be modified by delivering fluid to the brain, the ion concentration of the delivered fluid being such as to cause the ion concentration in the brain to be modified. The method may include replacing brain fluid, and may include replacing such fluid with fluid previously extracted from the brain. Epilepsy and other neurological disorders that are affected by the electrical potential difference between intracellular fluid and extra-cellular fluid and therefore the cell membrane potentials, and therefore the thresholds for the communication between brain cells can be controlled by re-circulating extra cellular brain fluid after the fluid has been treated to alter its ion concentrations. A computer-controlled pump can precisely control the extraction and delivery of brain fluid after the ion concentration of the fluid is appropriately adjusted, e.g. guided by the Goldman equation. Well-known techniques for modifying ion concentrations can be used to raise or lower ion concentrations as needed.